UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/791,506 | 03/02/2004 | Rajan V. Rao | PB 04 0001 (793-04US) | 2780 |

38790 7590 01/07/2009

THE SMALL PATENT LAW GROUP LLP
225 S. MERAMEC, STE. 725T
ST. LOUIS, MO 63105

| EXAMINER | |
|---|---|
| BOKHARI, SYED M | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2416 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/07/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## DETAILED ACTION

### *Response to Amendment*

1. Applicant amendment filed on September 30th, 2008 has been entered. Claims 1-27 are pending in the application.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeBoer et al. (US 2004/0208118 A1) in view of Anderson et al. (USP 5,838,924).

DeBoer et al. disclose an optical communication system for providing protection signaling between network elements with the following features: regarding claim 1, a sub-network connection system, comprising (Fig.1, a diagram of a data communication network, see “a global telecommunication network 10 contains series of sub-networks An, Bn, Cn, Dn and En by data transmission medium 12 and each sub-network contains network elements 14” recited in paragraph 0027 lines 1-13), the line modules being grouped into sets at a lower protection layer (Fig. 4a, a protection signaling scheme of a data communications network, see "wherein the number 1 represent the group number and N represents particular number of corresponding group" recited in paragraph 0037 lines 8-12), the sets of line modules being organized into working legs and protection legs at an upper protection layer (Fig. 4a, a protection signaling scheme of a data communications network, see "the working W paths of member of 1:N protection group" recited in paragraph 0037 lines 12-20 and paragraph 0037 lines 27-33), wherein the line modules are activated/deactivated based on different upper and lower protection schemes associated with the upper and lower protection layers (Fig. 4a, a protection signaling scheme of a data communications network, see "working path failure is

informed to source then protection path is provided by the module" recited in paragraph 0011 lines 3-15), state maps associated with each of the line modules, the state maps storing state data that activates and deactivates the line modules (Fig. 4a, protection signaling scheme, see “table located at the module the switching is based on the information contained in the routing table” recited in paragraph 0011 lines 22-32), the state maps being updated in accordance with the lower protection scheme to perform intra-leg switching between the line modules in one of the working and protection legs (Fig. 4a, protection signaling scheme, see “the state maps are updated” recited in paragraph 0013 lines 1-14), the state map being updated in accordance with the upper protection scheme to perform inter-leg switching between a first line module in one of the working and protection legs and a second line module in another of the working and protection legs (Fig. 5, shows a failure mode for an alternative embodiment of the sub-network, see “when a line failure of 34 is detected, the path switching is done” recited in paragraph 0046 lines 1-12), a network control module interconnected with the line modules (Fig. 2, a sub-network of a data communication network, see “the controller 28 is connected to each network element 14” recited in paragraph 0028 lines 1-8) and the network control module performing inter-leg switching by updating the state data in the state maps for corresponding line modules in associated working and protection legs (Fig. 4a, protection signaling scheme, see “the controller performs inter-leg switching” recited in paragraph 0012 lines 1-10); regarding claim 4, wherein the upper and lower protection schemes constitute a 1:N equipment protection scheme and a sub-network connection protection scheme (Fig. 4a, protection signaling scheme, see “provides 1:N

shared mesh protection system" recited in paragraph 0013 lines 1-6); regarding claim 5, a 1:N equipment protection scheme and a UPSR protection scheme (Fig. 4a, protection signaling scheme, see "provides 1:N shared mesh protection system" recited in paragraph 0013 lines 1-6); regarding claim 6, wherein each of the state maps is stored in memory on an associated one of the line modules (Fig. 4a, protection signaling scheme, see "table located at the module the switching is based on the information contained in the routing table" recited in paragraph 0011 lines 22-32); regarding claim 9, 1:N protection schemes (Fig. 4a, protection signaling scheme, see "provides 1:N shared mesh protection system" recited in paragraph 0013 lines 1-6); regarding claim 10, wherein the state maps are stored on one of the network control module and corresponding the line modules (Fig. 4a, protection signaling scheme, see "connection table is associated with line module" recited in paragraph 0012 lines 1-10); regarding claim 11, wherein the line modules perform intra-leg switching by updating the state maps for corresponding line modules all in a common single working leg (Fig. 4a, protection signaling scheme, see "the controller performs inter-leg switching" recited in paragraph 0012 lines 1-10); regarding claim 14, wherein a first line module operates in a VT mode (Fig. 4a, protection signaling scheme, see "line module operates in VT mode" recited in paragraph 0036 lines 16-24) and a second line module operates in a DS1 mode (Fig. 4a, protection signaling scheme, see "second line in DS1 mode" recited in paragraph 0031lines 5-9); regarding claim 15, a method for protection switching in a sub-network connection comprising (Fig.1, a diagram of a data communication network, see "a global telecommunication network 10 contains series of sub-networks An, Bn,

Cn, Dn and En by data transmission medium 12 and each sub-network contains network elements 14" recited in paragraph 0027 lines 1-13), receiving traffic signals at line modules that are grouped into sets (Fig. 4a, a protection signaling scheme of a data communications network, see "wherein the number 1 represent the group number and N represents particular number of corresponding group" recited in paragraph 0037 lines 8-12), where the sets of line modules are organized into working legs and protection legs (Fig. 4a, a protection signaling scheme of a data communications network, see "the working W paths of member of 1:N protection group" recited in paragraph 0037 lines 12-20 and paragraph 0037 lines 27-33), storing state data in state maps associated with each of the line modules (Fig. 4a, protection signaling scheme, see "table located at the module the switching is based on the information contained in the routing table" recited in paragraph 0011 lines 22-32), inter-leg switching between a first line module in one of the working and protection legs (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0013 lines 1-14), a second line module in another of the working and protection legs by updating the state maps in accordance with an inter-leg protection scheme (Fig. 5, shows a failure mode for an alternative embodiment of the sub-network, see "when a line failure of 34 is detected, the path switching is done" recited in paragraph 0046 lines 1-12) and activating and deactivating the line modules based on updates to the state maps (Fig. 4a, a protection signaling scheme of a data communications network, see "working path failure is informed to source then protection path is provided by the module" recited in paragraph 0011 lines 3-15); regarding claim 16, further comprising intra-leg switching between the line

modules in one of the working and protection legs by updating the state maps in accordance with an intra-leg protection scheme (Fig. 4a, protection signaling scheme, see "the controller performs inter-leg switching" recited in paragraph 0012 lines 1-10); regarding claim 17, 1:N protection, and UPSR protection (Fig. 4a, protection signaling scheme, see "provides 1:N shared mesh protection system" recited in paragraph 0013 lines 1-6); regarding claim 19, wherein the state maps are stored in memory on corresponding line modules (Fig. 4a, protection signaling scheme, see "table located at the module the switching is based on the information contained in the routing table" recited in paragraph 0011 lines 22-32); regarding claim 20, further comprising generating separate intra-leg and inter-leg state maps and logically combining the intra-leg (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0055 lines 1-16) and inter-leg state maps to create the state maps associated with each of the line modules (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0013 lines 1-14); regarding claim 21, further comprising monitoring the traffic signals for defects and performing the inter-leg switching when a defect is detected (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0055 lines 1-16); regarding claim 22, further comprising monitoring the traffic signals for defects and updating fault information when a defect is detected (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0013 lines 1-14); regarding claim 23, further comprising monitoring the traffic signals for defects and, when a defect is detected, determine whether an intra-leg protection scheme exists (Fig. 4a, protection signaling scheme, see

"the state maps are updated" recited in paragraph 0055 lines 1-16); regarding claim 26, wherein a first line module operates in a VT mode (Fig. 4a, protection signaling scheme, see "line module operates in VT mode" recited in paragraph 0036 lines 16-24) and a second line module operates in a DS1 mode(Fig. 4a, protection signaling scheme, see "second line in DS1 mode" recited in paragraph 0031lines 5-9); regarding claim 27, wherein a network control module performing inter-leg switching based on the upper protection scheme by updating the state data in the state maps for corresponding line modules in associated working and protection legs (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0013 lines 1-14) and the line modules performing intra-leg switching based on the lower protection scheme by updating the state data in the state maps (Fig. 4a, protection signaling scheme, see "the state maps are updated" recited in paragraph 0055 lines 1-16).

DeBoer et al. do not disclose the following features: regarding claim 1, line modules configured to receive bridged traffic signals over individual corresponding channels; regarding claim 2, wherein the line modules constitute I/O boards and the network control module performs a switch operation between a working I/O board in the working leg and a working I/O board in the protection leg when a defect is experienced in the traffic signal; regarding claim 3, wherein the lower and upper protection schemes constitute a 1+1 protection scheme and a sub-network connection protection scheme; regarding claim 5, wherein the lower protection scheme constitutes one of a 1+1 protection scheme; regarding claim 7, further comprising a single cell switch fabric containing the network control module; regarding claim 8, further comprising a multi-cell

switch fabric containing multiple switch fabrics separate and remote from the network control module; regarding claim 9, wherein the line modules generate a lower layer state map based on one of 1+1, UPSR and the network control module generates an upper layer state map based on an SNC protection scheme, corresponding the upper and lower state maps being logically combined to create the state maps; regarding claim 13, wherein the line modules constitute a non-SONET/mixed mode combination; regarding claim 17, wherein the intra-leg protection scheme is one of 1+1 protection; regarding claim 18, wherein the inter-leg protection scheme is SNC protection; regarding claim 24, further comprising identifying an intra-leg protection scheme before performing the inter-leg switching.

Anderson et al. disclose a an ATM connection protection switching apparatus and method with the following features: regarding claim 1, line modules configured to receive bridged traffic signals over individual corresponding channels (Fig. 2, point to point ATM node arrangement, see "protection switching arrangement" recited in column 1 lines 45-55); regarding claim 2, wherein the line modules constitute I/O boards and the network control module performs a switch operation between a working I/O board in the working leg and a working I/O board in the protection leg when a defect is experienced in the traffic signal (Fig. 2, point to point ATM node arrangement, see "controller performs a switch operation" recited in column 5 lines 1-12); regarding claim 3, wherein the lower and upper protection schemes constitute a 1+1 protection scheme and a sub-network connection protection scheme (Fig. 2, point to point ATM node arrangement, see "it is applicable to 1+1 mesh and ring protection switching"

recited in column 1 lines 55-59); regarding claim 5, wherein the lower protection scheme constitutes one of a 1+1 protection scheme (Fig. 2, point to point ATM node arrangement, see "it is applicable to 1+1 mesh and ring protection switching" recited in column 1 lines 55-59); regarding claim 7, further comprising a single cell switch fabric containing the network control module (Fig. 9, logical configuration of switch fabric, see "bidirectional line switched ring" recited in column 10 lines 5-12); regarding claim 8, further comprising a multi-cell switch fabric containing multiple switch fabrics separate and remote from the network control module (Fig. 9, logical configuration of switch fabric, see "bidirectional line switched ring" recited in column 10 lines 5-12); regarding claim 9, wherein said line modules generate a lower layer state map based on one of 1+1, UPSR (Fig. 2, point to point ATM node arrangement, see "it is applicable to 1+1 mesh and ring protection switching" recited in column 1 lines 55-59) and the network control module generates an upper layer state map based on an SNC protection scheme, corresponding the upper and lower state maps being logically combined to create the state maps (Fig. 2, point to point ATM node arrangement, see "inter-leg protection scheme" recited in column 1 lines 55-59); regarding claim 12, wherein the line modules are housed within one of a cross-connect and add/drop multiplexer and support one of uni- directional and bidirectional switching (Fig. 2, point to point ATM node arrangement, see "controller performs a switch operation" recited in column 5 lines 1-12); regarding claim 13, wherein the line modules constitute a non-SONET/mixed mode combination (Fig. 7, details of line terminal units, see "line terminals are non-SONET/mix mode" recited in column 9 lines 6-14); regarding

claim 17, wherein the intra-leg protection scheme is one of 1+1 protection (Fig. 2, point to point ATM node arrangement, see "it is applicable to 1+1 mesh and ring protection switching" recited in column 1 lines 55-59); regarding claim 18, wherein the inter-leg protection scheme is SNC protection (Fig. 2, point to point ATM node arrangement, see "inter-leg protection scheme" recited in column 1 lines 55-59); regarding claim 24, further comprising identifying an intra-leg protection scheme before performing the inter-leg switching (Fig. 2, point to point ATM node arrangement, see "modules are activated/deactivated" recited in column 4 lines 50-67 and column 5 lines 1-12); regarding claim 25, wherein the line modules constitute a non-SONET/mixed mode combination (Fig. 7, details of line terminal units, see "line terminals are non-SONET/mix mode" recited in column 9 lines 6-14).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the system of DeBoer et al. by using the features, as taught by Anderson et al., in order to provide line modules configured to receive bridged traffic signals over individual corresponding channels, the line modules constitute I/O boards and the network control module performs a switch operation between a working I/O board in the working leg and a working I/O board in the protection leg when a defect is experienced in the traffic signal, the lower and upper protection schemes constitute a 1+1 protection scheme and a sub-network connection protection scheme, the lower protection scheme constitutes one of a 1+1 protection scheme, a single cell switch fabric containing the network control module, a multi-cell switch fabric containing multiple switch fabrics separate and remote from the network control module, the line

modules generate a lower layer state map based on one of 1+1, UPSR and the network control module generates an upper layer state map based on an SNC protection scheme, corresponding the upper and lower state maps being logically combined to create the state maps, the line modules constitute a non-SONET/mixed mode combination, the intra-leg protection scheme is one of 1+1 protection, the inter-leg protection scheme is SNC protection and identifying an intra-leg protection scheme before performing the inter-leg switching. The motivation of using these functions is to enhance the system in a cost effective manner.

### *Response to Arguments*

6. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED BOKHARI whose telephone number is (571)270-3115. The examiner can normally be reached on Monday through Friday 8:00-17:00 Hrs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang B. Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Syed Bokhari/
Examiner, Art Unit 2416
1/4/2009

/Kwang B. Yao/
Supervisory Patent Examiner, Art Unit 2416